



U.S. EPA Support of International Capacity Building for GHG Mitigation

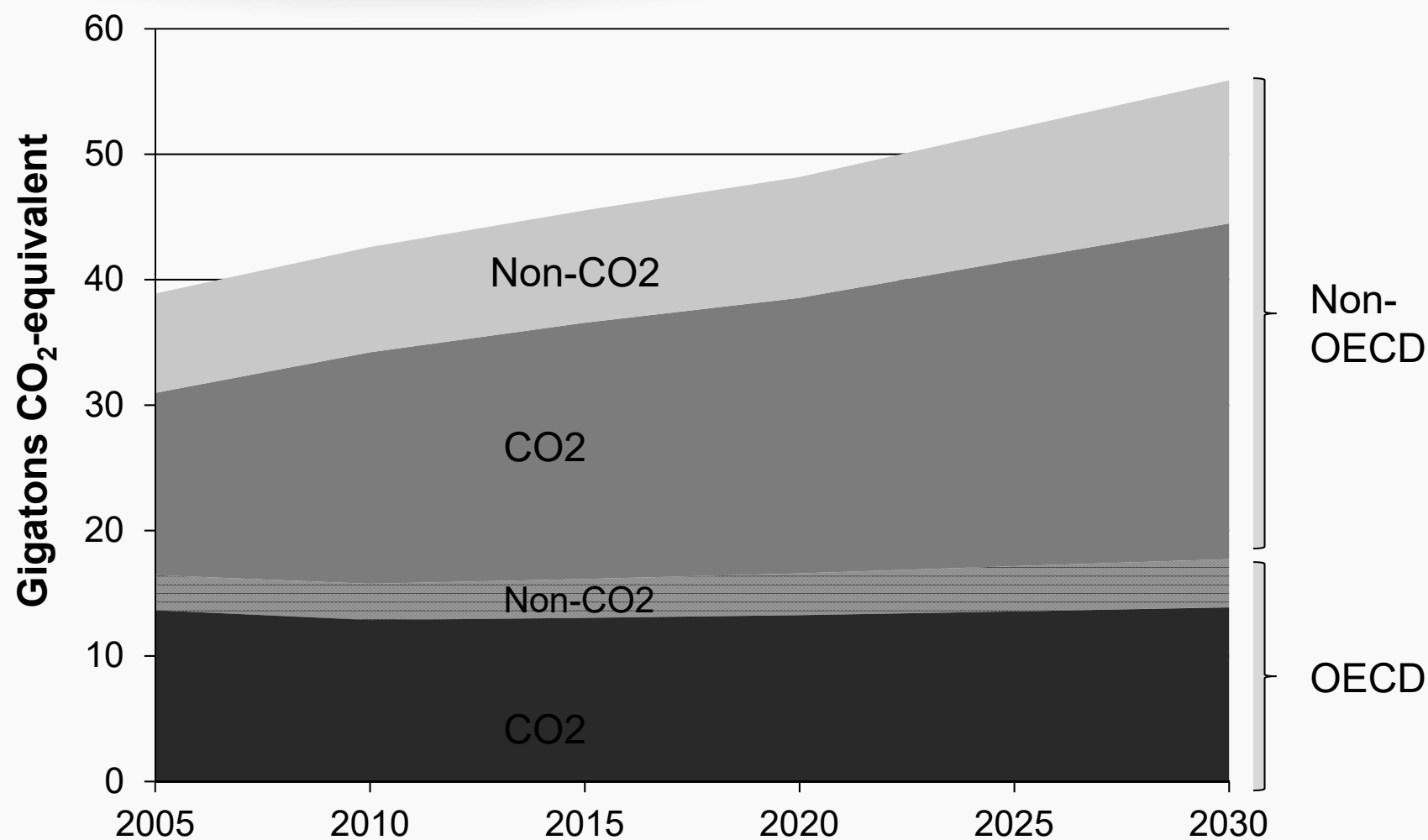
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Overview



- Context and Approach
- Assessing Emissions: Inventories & Facility Level Emissions
- Analyzing Mitigation Options: Modeling Capacity Building and Tool Development
- Supporting Implementation of Mitigation Actions

Global Emission Trends



Sources: International Energy Outlook (EIA, 2011),
Global Non-CO₂ GHG Emissions Projections Report (EPA, 2012)

Elements of a Low Emission Development Strategy



• **Assess Emissions**

- Develop/update **inventory of national greenhouse gas emissions; supplement as appropriate/feasible with facility-level or other data**
- Summarize/update economic data and identify national development goals and key drivers of growth

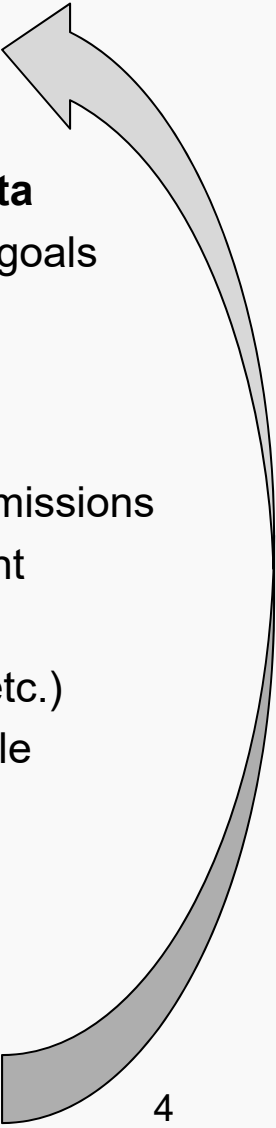


• **Analyze Options and Prioritize Actions**

- **Develop long-term projection** of business-as-usual development, emissions
- **Assess emission reduction opportunities** in context of development
 - Economic modeling and analysis of benefits and costs
 - Technical analysis of options (policies, technologies, practices, etc.)
- Rank alternative actions that lower long-term emissions trajectory while improving growth and responding to vulnerabilities



• **Implement, Monitor and Review**

- Implement priority policies/actions
 - Compare actual development and emissions with projections
 - Review and revise strategy/policies/actions as appropriate
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- A large, light gray curved arrow originates from the bottom right of the slide, near the page number, and points back up towards the top right, indicating a feedback loop from the implementation and review stage back to the assessment stage.

Assessing Emissions: Inventories and Facility-Level Emissions



“Can’t manage what you don’t measure”

Robust and regular national GHG inventories help:

- Understand national and sectoral GHG emission levels and trends
- Provide a foundation for planning, decision making and development of sound mitigation policies/actions
- Build confidence for stakeholders in ability to implement mitigation options
- Provide useful indicators for environmental goals, management, economic development and planning
- Meet UNFCCC reporting requirements (international obligations)

Facility-level reporting can supplement national inventory data and can play a critical role in option assessment, policy design and implementation, and measuring, reporting and verification of mitigation actions

EPA Inventory Capacity Building Approach



- **Goals**

- Assist countries to develop a high quality GHG inventories (transparent, complete, well documented), with focus on Agriculture and Forestry (LULUCF) sectors
- Build solid foundation for more regular reporting and steadily improving inventory quality

- **General approach**

- **Improve country's institutional capacity** to establish a sustainable National GHG Inventory System
- **Technical assistance** on methods, activity data collection & documentation
- Support through **application of standardized tools**
 - **National System Templates** to document, institutionalize and streamline the inventory management process
 - **Agriculture and Land Use (ALU) Software Tool** to compile activity data, perform calculations, implement QA/QC procedures and produce reports **for the Agriculture and Land Use sectors**
- Cannot “train” experts on methods alone—they must *learn by doing*

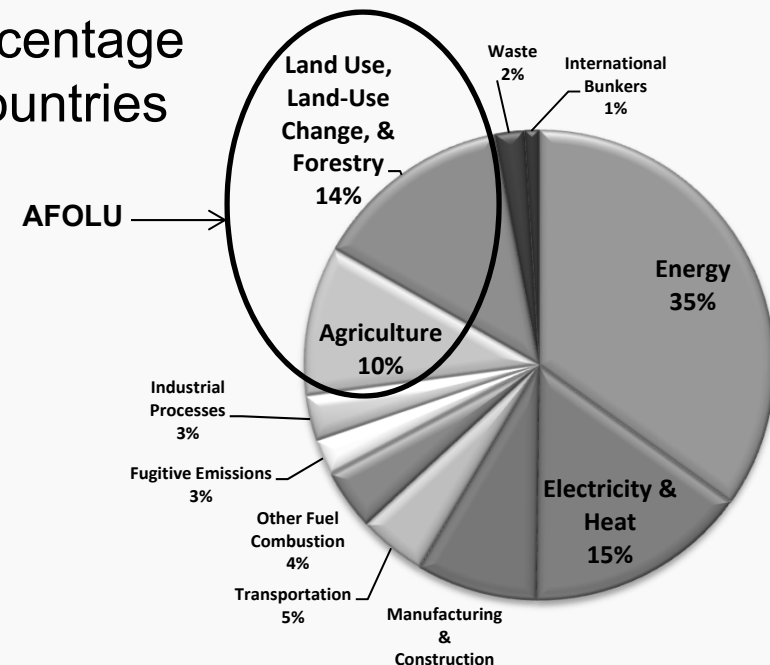
Why focus on Agriculture, Forestry and Other Land-Use (AFOLU)?



- AFOLU represents a relatively larger percentage of the total GHG flux for Non Annex -1 countries than Annex-1 countries (~24% vs. 4%)

- A well developed AFOLU inventory is a first step toward establishing the accounting methods for participating in REDD+ projects

- Tracking deforestation and changes in carbon stocks on forest lands
- Establishing reference levels



Emissions Profile: Non Annex 1 Countries
(WRI 2011 Climate Indicators Analysis Tools).

- The Agriculture and Land Use (ALU) software tool assists countries in preparing their AFOLU inventory
 - Guides inventory compilers through the process of activity data collection and emission factor assignment. Implements both IPCC Tier 1 and 2 methods
 - Imports Geographic Information System (GIS) data for land use, soils and climate
 - Generates detailed reports and worksheets fully functional with UNFCCC software 7

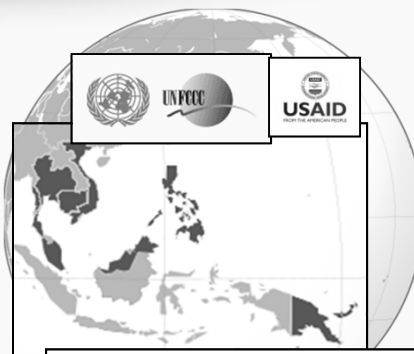
EPA Inventory Capacity Building Projects To Date (countries and activities)



Central America : First regional project. Developed our current approach and designed our tools.

Phase I: 2004-2007

Phase II: 2007-2010



South East Asia: Currently 6 country project. Strong partnership with UNFCCC. Applied the lessons and tools developed in CA. Phase I: 2008-2010. Phase II: 2011-2014.



Andean Region: Kickoff workshop in Sept 2012 (Columbia, Peru, Ecuador). Applying the lessons learned and tools developed for other regions. Collaborating with US SilvaCarbon Program.



Eastern and Southern Africa: Apply the lessons and tools developed in other regions. Strong partnerships with UNFCCC, CD-REDD and others so we can provide the expertise needed to get the job done. Phase I: 2011-2014

Inventory Capacity Building: Examples of Results



- General
 - Working directly with 19 countries in Latin America, Africa and Asia
 - Completed 15 draft country-specific workplans to improve inventory quality
 - Updated ALU tool to include mitigation, uncertainty, and non-Annex I UNFCCC Reporting Tables
- Some specific highlights
 - Assisted Papua New Guinea complete Agriculture/LULUCF inventory for Second National Communication using the ALU tool
 - Developing land use/land cover maps for 6 countries in Eastern/Southern Africa
 - Working with South Africa to design plot-based land use inventory
- More information:
www.epa.gov/climatechange/capacitybuilding

Assessing Emissions: Facility Level Reporting



- U.S. domestic greenhouse gas reporting program, administered by EPA, is a first-of-its kind program for GHG reporting from upstream and downstream sources across the economy.
 - Covers broad array of economic sectors
 - Fully integrated electronic reporting and verification
 - Non-confidential data made available to the public via the internet, together with innovative tools for analysis and geographic visualization
- Facility level emissions reporting can play a key role in planning, decision making, policy design and implementation, and measurement and verification of mitigation results
- EPA has presented on the U.S. domestic reporting program at international forums and is beginning to explore potential international interest in capacity building in this area

Analyze Options and Prioritize Actions



Building upon inventory results, other data and long-term GHG projections, countries can better identify opportunities to reduce emissions in the context of growth/development.

Analysis and prioritization of mitigation options is facilitated through **economic** modeling and other analytic tools to assess likely results of alternative actions, costs and benefits, and technical feasibility.

- Economic modeling to project potential results of policies or actions on emissions, economy-wide and sectoral output, prices, and welfare across income groups
- Analysis of benefits (e.g. energy savings, health benefits, climate benefits) and costs
- Technical analysis of policies, technologies and practices

Through such analysis, a country can more effectively **rank alternative actions that lower long-term emissions trajectory while improving economic development and responding to vulnerabilities**

EPA Modeling Capacity Building and Tool Development – Examples



Building Capacity through LEDS Modeling Forum

- Conducted by Pacific Northwest National Lab and EPA in tandem with the Latin American Modeling Project (LAMP); sponsored by USAID and EPA
- Implemented economic modeling exercise to analyze key aspects of a potential LEDS
- Brought together national and global modeling teams to share knowledge and resources; supported model development; findings to be published in peer-reviewed journal

Development of Analytic Tools – Rapid Benefits Assessment Tool

- Under the Climate and Clean Air Coalition, EPA is assisting in the development of a Toolkit to support National Action Plans to address short-lived climate pollutants.
- Developing a user-friendly climate and air quality benefits assessment tool to:
 - Accurately assess the potential climate and health benefits of alternative GHG mitigation options
 - Inform countries' choices as they develop National Action Plans
 - Help policy makers identify and communicate benefits of mitigation investments
 - Monitor progress of short-lived climate pollutant reductions and resulting benefits to health and climate
 - Evaluate the success of mitigation efforts

Supporting Implementation of Mitigation Actions



- EPA currently working internationally to develop capacity to implement emission mitigation actions through a number of programs, notably:
 - Support for Non-CO₂ policies and programs
 - Global Methane Initiative (GMI)
 - Transportation
 - SmartWay
 - Climate and Clean Air Coalition

Global Methane Initiative (GMI)



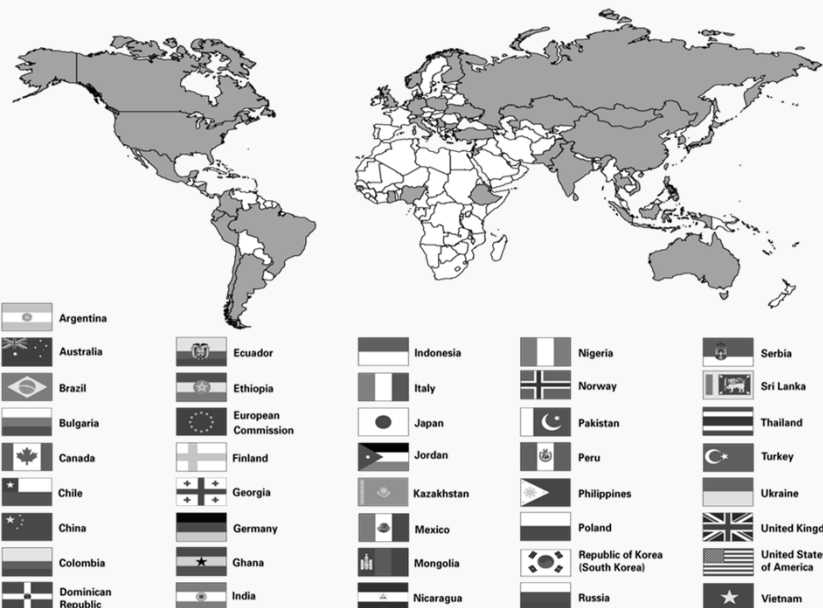
Mission:

Voluntary, multilateral partnership that aims to reduce methane emissions and to advance the abatement, recovery and use of methane as a clean energy source.

- **Targets Five Sector-Specific Areas for Methane Reduction:**

- **Agriculture**
- **Coal Mines**
- **Municipal Solid Waste**
- **Municipal Wastewater**
- **Oil and Gas Systems**

- **41 Partner Countries and the European Commission**



GMI: Delivering Results Today and a Model for Future Success



- Building capacity and reducing barriers to methane mitigation Projects
 - Supporting work at over 700 sites
 - **Total annual reductions of 38.7 million metric tons CO₂e in 2011**
 - Delivering environmental and energy co-benefits
- Strong support from emerging market countries globally
- You are invited to participate in the GMI Expo, Vancouver , March 2013
 - Premier global event, open to all that brings together governments, industry and NGOs to promote methane project development worldwide
 - www.globalmethane.org/expo



SmartWay International



SmartWay International Summit - December, 2008

- Thirteen countries participated

“SmartWay” sister program developments

- Mexico launched Transporte Limpio
- Canada adopting SmartWay tools and brand
- France, EU, Australia adopting SmartWay program design

FleetsSmart



Commission for Environmental Cooperation

- Recommends strengthening and harmonizing N. American programs to share data & emission factors

World Bank and Clean Air Initiative-Asia

- SmartWay technologies used for Green Truck Pilot Project in Guangzhou
- Guangdong Green Freight Demonstration project to enhance logistics, financing and capacity building



Green Freight China Initiative – National program development



Climate and Clean Air Coalition

– Overview



- Many countries and organizations concerned with impacts of short-lived climate pollutants (methane, tropospheric ozone, black carbon, HFCs) and have pursued mitigation opportunities
- Increasing number of scientific and policy reports in recent years have heightened this concern
- Need seen for a body to:
 - advance discussions on short-lived climate pollutants
 - work with interested countries, companies and other stakeholders
 - leverage high-level political will
 - and scale-up existing actions and achieve major reductions
- 7 founding partners (Bangladesh, Canada, Ghana, Mexico, Sweden, United States and UNEP) – now increased to 20 states and 18 non-state partners.
- 7 initiatives launched

CCAC Initiatives Overview



- Initial priorities of the Coalition's work
- Cover reductions of three core pollutants: methane, black carbon, and HFCs
- Focus on quick, low-cost impacts and scalability
 - Short-lived climate pollutants from **municipal solid waste, landfills**
 - **HFC alternative** technology and standards
 - Methane from **oil & natural gas production**
 - Black Carbon from **diesel vehicles and engines**
 - Black Carbon from **brick production** (kilns)
- Agreed by all partners, approved by ministers, led by country partners
- Focus on scaling up existing initiatives; additional initiatives proposed
- EPA playing a key role in U.S. leadership of and participation in several of these initiatives

Climate and Clean Air Coalition – Promoting HFC Alternatives



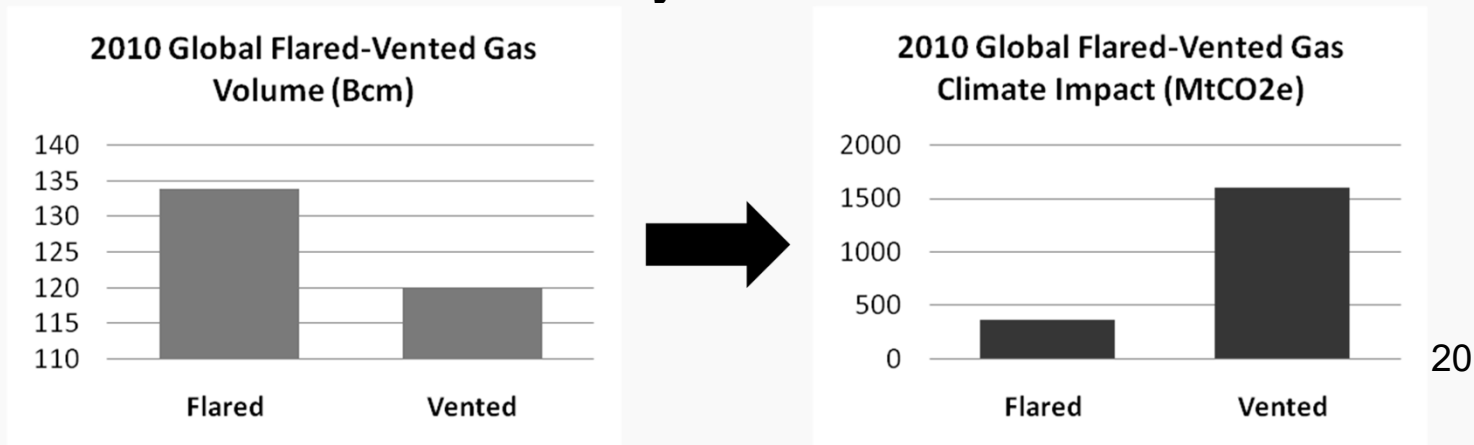
- **Goal:** provide a platform for cooperative activities between governments, private sector, and other stakeholders to promote climate-friendly alternatives to high GWP HFCs across sectors
- **Approach/Actions:** Change current trajectory of rapid growth by **enabling new technologies and addressing standards**
 - **Capacity Building-**
 - July Bangkok Technology Conference
 - Dec. Commercial Refrigeration Tech Forum
 - **Inventories:** 5-8 Countries on the installed base and anticipated growth in HFCs and alternatives that represent more of a global view
 - **Case Studies**
 - Develop information by sector that can be used on a global basis
 - Future work on reducing barriers that hinder alternatives through **demonstrations and updating standards**

Climate and Clean Air Coalition

– Oil & Gas



- **Goal:** Accelerate and expand achievements of existing voluntary partnerships to increase near-term reductions of methane and black carbon from oil and gas operations
 - Oil and gas operations account for 22 percent of global anthropogenic methane emissions. Flaring releases substantial amounts of black carbon.
- **Approach/Actions:** Promote high-level engagement and attention to issue through national governments and oil and gas companies.
 - Partnership will leverage company and country actions to address the 30% of oil and gas methane emissions that can be reduced through widely available technologies/practices at zero cost
 - **The Coalition calls on oil & gas companies to work collaboratively to design specific mechanisms and voluntary commitments to reduce SLCP emissions.**



Climate and Clean Air Coalition

– Municipal Solid Waste



- **Goal:** Enable cities to reduce SLCP emissions across the waste sector. Cities will work with the support of their national and regional governments to implement specific SLCP mitigation projects.
- **Approach/Actions:** Provide targeted technical assistance in the following areas to facilitate projects aimed at reducing methane and black carbon.
 - City specific technical assistance
 - Training and capacity building
 - Development of tools and resources
 - Communications and outreach
- **Potential Cities:** Accra, Amman, Dhaka, Lagos, Rio, New York, Tokyo, Stockholm, and Vancouver. Additional cities in Mexico and Colombia to be identified.

Climate and Clean Air Coalition – Reducing Diesel Black Carbon Emissions



- **Goal:** Reduce black carbon emissions from heavy duty vehicles and engines through the use of cost-effective emerging technologies that can result in emission reductions of up to 90%.
- **Approach/Actions:** Develop and implement a global program, with regional clusters working on 3-pronged strategy to reduce black carbon emissions within:
 - **freight transportation supply chain**
 - Green Freight and SmartWay programs
 - **urban areas**, through city action plans
 - City level activities
 - City fleets (bus fleets etc)
 - City ports
 - **countries**, by reducing sulphur in fuels and vehicle emissions standards
 - National level activities
 - Low sulfur fuels
 - Heavy duty vehicles actions

More Information



- EPA Climate Change <http://www.epa.gov/climatechange>
- National GHG Inventory Capacity Building
<http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html>
- GHG Reporting Program <http://www.epa.gov/ghgreporting/>
- Global Methane Initiative: www.globalmethane.org
- CCAC: www.unep.org/ccac
- LEDs
http://en.openei.org/wiki/Gateway:Low_Emission_Development_Strategies
- SmartWay
<http://www.epa.gov/smartway/international/index.htm>